REMARKS

Reconsideration and allowance in view of the foregoing amendments and the following remarks is respectfully requested.

Claim amendments/Status

Claims 1-11 remain pending in the application.

Rejections under 35 USC 103

The rejections of:

1) claims 1-4 and 6-10 are rejected under 35 USC §103(a) as being unpatentable over Zoraster (US 5,839,091), and further in view of Mitchell ("An Algorithmic Approach to Some Problems in Terrain Navigation, hereinafter "Mitchell 1986") and Tran (US 5,892,462); and

2) claims 5 and 11 are rejected under 35 USC §103(a) as being unpatentable over the combination of Zoraster, Mitchell 1986 and Tran, as applied to claims 1 and 6 above, and further in view of Margolin (US 6,177,943); are respectfully traversed.

Zoraster

Zoraster relates to a method for incorporating high quality geologic interpretations onto computer generated contours. Note is called to the abstract which indicates that Zoraster method starts with a trend form grid on which characteristics of geological formations are superimposed. Contours of such characteristics with respects to the trend form grid are generated using a distance transformation.

Further, Zoraster discloses a method of using a distance transformation that is not of the same kind as the distance transformations defined in claim 1 of the instant application because it is used with several sources "two embedded feature pixels represented by 0's" – see column 1, line 42.

Thus, it is submitted that Zoraster does not suggest the distance transformation defined in pending claim 1. Furthermore, Zoraster does not explicitly teach the process wherein if a goal point is in a prohibited zone, the point is excluded from the search of the shortest path. However, the Zoraster reference actually cites the works of Mitchell. Zoraster suggests that:

(i): "C(i,j)'s become a general cost factor such as time" (see column 3, lines 5-6); and

(ii):"the values of the C(i,j) are made a function of the terrain at the operator position, Pixels which are difficult to travel through have large costs associated with them" (column 2, line 6-9).

Mitchell

Mitchell's 1986 paper entitled "An algorithmic approach to some problems in terrain navigation" relates "to path planning problem in which we are given a map of a region of terrain and we are expected to find optimal path planning paths from one point to another" (see abstract).

Mitchell indicates how a goal point is excluded from the search of the shortest path if it is located in an area that is prohibited. Further, Mitchell discloses that "if an edge is a line segment of a ditch or a fence, then it may be assigned a fixed cost of crossing it. The fixed cost would be +OO if the edge cannot be crossed" (page 13, 2nd paragraph). However, the disclosure of Mitchell is restricted to terrain navigation as mention in the title of the article. He assumes that the "vehicle is not able to fly" (page 8, 2nd paragraph).

As explained in the instant specification: "a distance transform operating by propagation used with a static constraint within the context of terrain navigation for robots, is not suitable for terrain navigation for aircraft for which the threat presented by a relief or an obstacle on the ground depends on the vertical profile of its trajectory"(paragraph [0008] of publication 2007/0031007).

In the case of an aircraft, the uncrossable zones change as a function of the vertical profile imposed on its trajectory. Thus, it impossible to use a prohibited-zone marker associated with the elements of the terrain elevation database appearing in the map. Thus, Mitchell cannot suggest the exclusion of a goal point from the search of the shortest path if it is located in an area that is prohibited, that is defined in pending claim 1.

It is clear that the disclosure of Mitchell does not work if the configuration of the prohibited zones varies as a function of the time of travel of the mobile object. Thus, the combination of Zoraster and Mitchell does not disclose how to exclude a point from the search of the shortest path if it is located in a prohibited area for terrain navigation for aircraft and more generally for a mobile object subjected to dynamic constraints prohibiting it from certain zones

of the map referred to as prohibited zones of passage whose configuration varies as a function of the time of travel of the mobile object.

Mitchell mention constraints that vary as a function of the time of travel of the mobile object ("speeds may also depend on other factors such as time of day, precipitation, or the location of other vehicles", page 11, paragraph 2) but does not disclose how to take them into account. (However, we assume that a given problem instance has fixed weight", - page 11, paragraph 2).

Tran

The Tran reference relates to a ground collision avoidance system. This reference does not teach how to take into account constraints that vary as a function of the time of travel of the mobile object in the search of the shortest path.

Furthermore, Tran teaches a way to avoid ground obstacle that consists in modifying the vertical profile of the aircraft. (GAP 228 is used to indicate to the pilot that a different flight path should be initiated at that point to achieve ground avoidance situation. In block 272, the system initiates a climb out procedure by displaying a recommended vertical flight path 222." - column 7, lines 23-27).

The solution of the invention is different. It consists in modifying the lateral flight path to avoid the obstacle. Thus, the combination of Zoraster, Mitchell and Tran does not disclose all the characteristics of our invention. In particular there is no document that discloses:

- the same distance transformation method as the distance transformations defined in claim 1 of our patent application;
- a way to take into account constraints that vary as a function of the time of travel of the mobile object in the search of the shortest path.

Furthermore, considering the teachings of the prior art, one of ordinary skill in the art of invention would have to: 1) search for the shortest path without considering dynamic constraints (according to Mitchell's disclosure) and 2) then modifying the vertical profile in order to avoid obstacles (according to Tran's disclosure).

This is different from the method defined in pending claim 1. In fact, this method consist of: 1) translating into times of travel for the mobile object, the lengths of the paths catalogued,

during the application of the chamfer mask to a goal point, with a view to searching for the shortest path and 2) excluding from the search for the shortest path, the catalogued paths whose times of travel for the mobile object are such that the goal point would belong to a prohibited zone of passage at the moment at which the mobile object reached it.

It is therefore submitted the subject matter of pending claim 1 is not rendered obvious by the cited art taken either individually or in combination. The disclosure of Margolin is not seen as assisting the hypothetical person of ordinary skill in overcoming the various dilemmas which occur with the proposed combination of Zoraster, Mitchell 1986 and Tran, references outlined *supra*.

Conclusion

All objections and rejections having been addressed, it is respectfully submitted that the present application should be in condition for allowance and a Notice to that effect is earnestly solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,
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